1:Stanford U. S-4, 5 1956 AF16 SW China
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248 If we use 1949 as the base year (100),
433 the average yield per unit of land was 134 in 1952, 156 in 1953, and 164 in 1954 and 1955.

D. Other Agricultural Products

244 Southwest China's production of edible
433 oil (excluding soybean oil) surpasses the majority of regions in China, and the output of oil from rapeseeds ranks first on the Mainland. It was estimated that the total production of rapeseed oil in Szechwan Province alone amounted to 108,000 metric tons (118,800 tons) in 1955, an increase of 28 per cent over the amount produced in the preceding year.[20]

249
245 In addition to the production of rapeseed,
433 Szechwan Province is also the chief producer of sugar cane and oranges. Tremendous quantities of sugar cane are grown on the plains of Chengtu; the output of sugar cane in 1955 was 1,180,000 tons more than the output in 1949, according to one report.[21] The
245
433 oranges and tangerines grown in Szechwan fill all local needs and are exported to other parts of China as well as to the Soviet Union

20. China Daily News, New York, Aug. 31, 1955.

21. Wen-hui Pao [Wen-hui Daily], Hong Kong, July 25, 1955.

1:Stanford U. S-4, 5 1956 AF16 SW China
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433
245 and her satellites. According to one estimate,
[439] the annual export of fruit from Szechwan brings to China in return 4,000 tons of steel products.[22]

241 Szechwan Province also produces raw
433 silk, ramie, herb medicines, hogs, and over
245 400 different "native products," of which at least 40 are for export.[23] The leading export is tung oil, of which Szechwan produces an amount second only to that produced in Hunan Province in the Central-South Region. The prewar average production of tung oil was estimated to have been 1,000,000 shih-piculs (55,000 tons), and in 1947 this amount had been increased to 1,292,372 shih-piculs (71,080 tons).[24]

245 The principal special products of Yunnan
433 Province are tea, herb medicines, and oil-bearing crops such as rapeseeds and peanuts. "P'u-erh" tea and the ball of compressed green tea leaves known as "T'o-ch'a", produced in Yunnan, are popular throughout China.[25]

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22. Ibid.
23. Ibid.
24. Ma Chi, Chung-kuo Ti Shen-lin [China's Forestry], Shanghai, Commercial Press, 1952, p. 45.
25. China Daily News, New York, Aug. 15, 1955.

1;Stanford U. S-4, 5 1956 AF16 SW China
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245 The Communists have ordered the increased
433 production of tea. The production target set for Yunnan in 1955 was approximately 48 per cent higher than the output in 1954, which in turn was 21 per cent above the amount produced in the preceding year.[26]

According to a radio report from Peking, the province of Yunnan has been designated as one of the major coffee growing districts in Communist China. The region abounds with wild coffee plants; the Communists propose that in the spring of 1956 millions of coffee plant seedlings be transplanted and cultivated.[27] The first harvest is expected in three years' time, and plants for processing coffee beans are to be built.[28]

241 Kweichow Province has comparatively
433 poor agricultural resources. With the exception of grain, this area does not produce a significant quantity of any important commodity. The output of tung oil and tobacco amounts to about 450,000 shih-piculs (24,750 tons) per
273 year.[29] "Mao-t'ai" wine, which resembles dry
433 gin, has reportedly gained an international reputation and has become one of the leading exports from the province of Kweichow.

26. New China News Agency, Kunming, April 6, 1955.

27. Examiner, San Francisco, Nov. 6, 1955, p. 9.

28. Ibid.

29. China Daily News, New York, August 16, 1955.

1:Stanford U. S-4, 5 1956 AF 16 SW China AFIG

439 and other relevant statistics indicate that between
237 15 and 20 per cent of the nation's bristles exports normally originated in Southwest China.

IV. TUNG OIL

439 During the last two decades, several impor-
245 tant developments have occurred in the tung oil trade between the United States and China. First, from 1939 to 1953, the United States' domestic production of tung oil increased by more than ten-fold, whereas the quantity imported was reduced by about two-thirds. In 1953, domestic production for the first time surpassed imports of the commodity. (See Table 3.)

A second important development was the decreasing importance of China as a source of supply for tung oil imports into the United States. Before World War II, more than 90 per cent of American tung oil imports usually came from China. During 1943-45, the Chinese supply disappeared almost entirely from the American market because of the wartime disruption of major transportation arteries between China and the outside world. A temporary recovery in the oil trade between the two countries occurred in 1946, but in the years following, the relative importance of the Chinese supply of tung oil to the United States was greatly reduced because of the increased production of tung oil in South American and the curtailment of Chinese trade as a result of civil war in the country.

439
245 Yet another development in the Sino-American tung oil trade after World War II was the decline in the relative importance of the American market as an outlet for Chinese tung oil exports. From 1932 to 1937, Chinese tung oil shipments to the United States constituted from 62 to 72 per cent of China's total tung oil export. During 1946-48, the ratio dropped to between 31 and 52 per cent.

Like other statistics cited in this chapter, those pertaining to tung oil include only the quantity involved in direct trade between China and the United States; they do not account for shipments from China to America via Hong Kong, or other intermediate ports. The practice of indirect shipment was commonly used during the war because of the Japanese occupation of China's maritime provinces and was frequently resorted to in the postwar era to evade trade and foreign exchange restrictions enforced by the Nationalist Government. Despite the absence of figures on Sino-American indirect trade, the decreasing importance of Chinese tung oil to the United States market because of expanding production of the commodity in North and South America is quite evident.

Normally, about one-third of China's tung oil export comes from Szechwan; Kweichow, another Southwestern province, also produced tung oil but on a much smaller scale. Before the Communist Government came to power in Mainland China, the tung oil from Szechwan was usually shipped lighter in barrels or in bulk via the Yangtze River to Shanghai, where it was transhipped to foreign countries.

1:Stanford U. S-4, 5 1956 AF16 SW China AF16

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Table 3. China's Tung Oil Export in Relation to the United States' Import and Production of Tung Oil a/

Year	U. S. Domestic Production (- - - - in thousands of pounds - - - -)	U. S. Import for Consumption	U.S.Import From China	Total Export From China (in millions of lbs.)	U. S. Import From China as Percentage of: Total U.S.Import for Consumption	Total Export from China
1931	- - -	74,888	--	108.2	95.45	-
1932	- - -	72,596	68,106	107.0	93.4	61.96
1933	- - -	114,544	117,213	166.2	96.5	72.5
1934	- - -	110,007	90,478	163.9	94.4	55.2
1935	- - -	130,089	109,467	161.9	91.2	68.6
1936	- - -	134,850	127,319	191.2	94.9	71.6
1937	- - -	174,885	141,545	227.0	91.1	62.3
1938	- - -	107,496	12,588	162.6	-	8.2
1939	3,000	70,718	1,550	75.9	-	2.1
1940	88	97,089	-	81.2	-	-
1941	5,555	45,800	-	46.2	-	-
1942	1,290	8,289	-	8.0	-	-
1943	5,210	88	-	.2	-	-
1944	1,888	1,771	-	.2	-	-
1945	101,955	1,570	-	.2	-	-
1946	11,048	56,919	55,888	77.7	98.6	60.2
1947	12,880	114,327	86,758	177.6	68.09	50.9
1948	16,837	133,558	90,598	167.9	68.0	83.7
1949	22,660	56,827	-	-	-	-
1950	23,687	106,061	-	-	-	-
1951	13,887	54,867	-	-	-	-
1952	23,181	89,850	-	-	-	-
1953	48,188	-	-	-	-	-

a/ U.S. Department of Agriculture, Agricultural Statistics, 1954; U.S. Department of Commerce, Foreign Commerce Yearbook, 1948, 1949 and 1950; and Statistical Abstract of the Republic of China, 1947.

(Table 3 faces p. 949.)

[Facing P. 949]

1:Stanford U. S-4, 5 1956 AF16 SW China AF16
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439
245 After 1949, the pattern of the trade was drastically changed. Partly because of the trade policy of Communist China and partly because of American government restrictions on trade with Red China and the use of Chinese Communist assets in the United States, the continuance of Chinese tung oil exports on the old scale to the United States became impossible. Although during the last few years a considerable amount of tung oil has been shipped to the United States from Communist China, the volume has been relatively small compared to that of the pre-Communist era. Apparently, the United Kingdom, Western Europe, and countries in the Soviet bloc have replaced the United States as the leading outlets for Chinese tung oil exports.

2: Rock K-5 (1934-) 1947 AF16 Southwest China AF16

the Dang or A-dang lung-pa (Chü-k'o-ti Chiang). Instead of following the stream a rocky trail leads to a pass on the spur, and we descend to what is left of or originally was Liu-t'ung-chiang 溜筒江 (MAJ. D., Liu-t'ou-chiang 溜頭江; Ting's New Chinese Atlas gives the name Lan-ts'ang-chiang = Mekong instead, this is an error) situated on the east bank of the Mekong at an elevation of 7,800 feet. Liu-t'ung-chiang refers to the rope-bridge which spans the Mekong here; the village, if such it can be called, consisted of one single mud-brick house in ruins, but inhabited by a poor family, apparently squatters. Opposite on the west bank of the Mekong is the Tibetan hamlet of Ma-pa-ting 麻巴定 (written Mag-pa-sdeng in Tibetan).[20] The rope bridge here spanning the Mekong is about 100 feet above it, the river flowing between steep rock walls and is about seventy yards wide. The only water available is the muddy water of the Mekong. Women go down with huge wooden cylinders to fetch it; to prevent the water from splashing they float a lot of dead twigs on it, in lieu of green leaves or leafy twigs as is usual.

The wind howls furiously in this arid gorge, filling the air with dust. It is one of the dreariest regions, dry, forsaken, and forlorn, a veritable desert.

5. YAR-KHA-LO (YA-K'A-LO 雅卡洛)

A trail continues along the gorges of the Mekong to Yar-kha-lo (Ya-k'a-lo), a distance of five days from Liu-t'ung-chiang. The mountains which hem in the Mekong are steep and the trail is here and there obliterated by land-slides of loose shale. It often leads to a height of 10,000 feet or even more, crossing bare spurs between which lateral streams descend from the snowy heights. In these lateral valleys are situated Tibetan hamlets, where barley and wheat are cultivated, with fruit trees such as pears, peaches, and walnuts, on the margins of the fields.

On the west bank of the Mekong are about as many villages as on the east bank. North of Liu-t'ung-chiang beyond the village of Ma-pa-ting there are the following in the order named from south to north: Ssu-ts'un 司村, Jung-ma 容馬, and Me-re-shü (Mei-li-shu). South of Ssu-ts'un are the hamlets of Kua-lo 瓜洛 and Hu-li 呼里. On the east bank Chiang-p'u 江舖, La-p'u 臘舖, Pa-me or Pa-mei 巴美 (MAJ. D., Pamien) and Pa-yung-kuo 巴永郭 (MAJ. D., Pa-yung-ko) and then Yar-kha-lo. Pa-yung-kuo is at an elevation of 11,500 feet.

Yar-kha-lo (Yar-kha-logs) is a town of about 100 houses, and is situated at 9,500 feet elevation (latitude 29° 2′ 30″). Here are important salt wells situated on the banks of the Mekong between giant blocks of granite; they supply all the villages of this region with salt. The valley slopes are composed of weathered sandstone, while about 300 feet above the river are beds of rubble which are apparently river terraces. A Catholic mission station has been established for many years in the town. Since the Tibetan wars in 1930–1931 Ya-k'a-lo has been annexed by the Tibetans, and is now reckoned to Tibet proper instead of Ssu-ch'uan. The Yün-nan — Tibet and former Ssu-ch'uan border is only a short distance beyond Pa-yung-kuo.

5: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16

CHAPTER XII

SSŬ-MAO AND P'U-ÊRH.

The town and plain of Ssŭ-mao—A commercial centre—The famous P'u-êrh tea—Cotton—A treaty port—French travellers—A Tibetan caravan—The Ma-hei tribe—P'u-êrh—An official town—An uncivil official—A friendly Shan—Routes westward from P'u-êrh.

361 Ssŭ-mao T'ing was the first real Chinese town I had come across since leaving Mien-ning nearly six weeks before. It is built on the end of a low spur which runs down from the hills to the east of the plain and is surrounded by a 25 feet brick wall, about a mile in perimeter. Inside the city are some 1,300 houses, but the business quarter is in a large suburb of 1,700 houses outside the south gate. The plain is some 10 miles long by three miles wide, and is at an elevation of 4,800 feet. Like many other places in Yün-nan it was formerly a Shan state, and it is still known to the Shans by the name of Möng Læ.

438 245 It is, for Yün-nan, a large commercial centre, the trade being principally confined to tea and cotton, both of which commodities are brought from the Shan States which lie to the south. The tea, which under the name of P'u-êrh tea is famous for its good quality throughout the Chinese Empire, is grown in the hills from six to twelve marches south of the town, in the Chinese Shan State of Keng Hung, or Chiu-lung-chiang as it is called by the Chinese. The principal tea-growing centres that I could hear of are Yi-pang, Yi-wu, Yu-lo, Man-sa, and Man-la, all of which places are in Keng Hung territory to the east of the Mekong. The yearly output is estimated at 15,000 mule-loads, which would amount to some 900 tons. Its price averages about [434] three pounds for a rupee (1*s.* 4*d.*). The value of the annual export would then, if these figures are correct, amount roughly to 670,000 rupees, say £45,000.

[p. 96]

5: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16

fitted with a handle to wheel along the road. These wheels we found most accurate and satisfactory, and we all used them throughout our two seasons of surveying. Spare cyclometers had to be carried as they wear out in time.

On the 29th November I left T'êng-yüeh by the west gate and crossing a bare ridge by a low gap between two conspicuous peaks, descended into the fir-woods of the plateau country of Hsi-lien.

We slept at Mu-shui-ho, and found the country people extremely civil, a pleasant contrast to the T'êng-yüeh mob. One old gentleman was particularly communicative and offered to be my guide the next day to the mule and sheep breeding village of Lu-ts'ung-shan. We had a beautiful walk there in the morning over undulating ground through pleasant woods of fir and other trees, the properties of different families being marked off by stone walls. The villages are quite hidden away in trees—peach, walnut, chestnut, plantain, golden bamboo, and the *tsung-pao* palm[1]. If a railway is ever made to T'êng-yüeh this plateau ought to become the hill station of Burma. Situated at 6000 feet above the sea in a beautiful well-watered country, I can imagine no more pleasant contrast with the scorching sun of Mandalay or the hot mugginess of Rangoon.

The simple villagers of Lu-ts'ung-shan I found rather timid at first, frightened either of me or of the Chinese soldier who accompanied me. But a more talkative man soon appeared. The sheep, it seems, are worth about two taels each (five rupees, or 6*s.* 4*d.*), and they use their wool for making rugs. They have tried taking the sheep to sell at Bhamo, but say that it does not pay. They cannot stand the warmer climate and want of grass in the Taping valley, and many of them die on the way. At present the mutton for Burma all comes from India, but with a railway to T'êng-yüeh, the want could no doubt be supplied from Yün-nan. The mule breeding here does not seem to be on a large scale. They get their donkeys from the province of Shen-hsi, and pay as much as 80 or 100 taels for them, a large price in this part of China.

Agricultural pursuits are not the only occupation of the

[1] See p. 77.

5: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16

563 given them, but they call themselves Mhong. I have always found them very pleasant and friendly.

From Méng-p'éng it took us two days of fairly easy going through a country peopled chiefly by Shans and Las to reach Na-hsang, a Shan village just on the Chinese side [245] of the frontier. The village was full of orange trees, which were at this season covered with fruit—one of the prettiest crops conceivable.

000 The next day we crossed the boundary and reached Taw-nio, the British frontier fort, where I found Captain G. W. Johnson in command of the garrison of military police. Only those who have travelled alone in strange countries can fully understand what a pleasure it is to meet one of one's own race and talk English again. And indeed Captain Johnson himself had been leading as solitary a life as I had, for he was the only European in Taw-nio, and was dependent for his society on the rare visits paid by civilians or police officers from Lashio, the headquarters of the Northern Shan States, which lies 120 miles off to the west.

I fully expected to hear news here of Turner and Ker, but there was none forthcoming. It was of great importance that I should see them so as to arrange their future movements, so there was nothing for it but to wait till they came. I considered myself extremely fortunate in being able to make this enforced halt in a British fort and with such a pleasant host as Captain Johnson.

Taw-nio, or Ma-li-pa as the Chinese call it, is a frontier district which, though ruled by a Chinese chief, would have the strongest objection to being handed over to the Chinese empire. It forms part of the Shan State of Hsen-wi[1], and no doubt its inhabitants find that they have much more independence in their present position than they could hope for under Chinese officials, especially now that the mandarins have begun to interfere more and more in the affairs of the border States and to establish garrisons close to the British frontier.

The main part of Taw-nio consists of a grass plateau pleasantly dotted with patches of jungle. Villages are few

[1] Called Theinni by the Burmese, and Mu-pang by the Chinese.

5: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16

669 of treachery on the Mahommedan side were very common all through the rebellion.

000 After an uphill march on the 18th through jungle and fir woods to the pleasant little hill village of Pai-yin-ch'in, we descended the next day to the Ching-ku Ho, which here runs through a curious valley, so much cut up by wooded spurs and deep sandstone ravines that it can hardly be called a plain. There is scarcely any flat ground, but there are a good many villages scattered along the valley, and the side streams are lined with terraced fields. The country reminds one very much of the upper part of the Shweli River.

• 245 There is a certain amount of tea grown on the hillsides here, at heights between 4,500 and 5,500 feet in a sandstone soil. It is not considered so good as that produced in the Shan state of Keng Hung, the famous P'u-êrh tea.

136 I shot a woodcock on the march which brought us into the Chïng-ku valley. I have occasionally seen this bird in different parts of Yün-nan, and have met with it in May in the Tibetan part of Ssŭ-ch'uan.

000 Our route for the next day and a half still lay down the Ching-ku Ho, but the country is so broken by steep spurs running down to the river, that there is little actual flat going. The river is twice crossed. The first crossing is by a wooden bridge where the stream, though not 20 yards wide, runs in a tremendous chasm between cliffs 200 feet high. These extraordinarily deep ravines are characteristic of this valley.

We reached Wei-yüan on the 21st December, and I found the place in no way changed since my previous visit. From Wei-yüan to P'u-êrh is only four or five marches by the direct road, but I had been along this route in 1895. I therefore struck off in an easterly direction for Hsin-fu, a place near which Turner and Ker had come in to the P'u-êrh-Ta-li road in the previous season. From there by turning south to P'u-êrh I should be able to get in the only part of this important road that had not been surveyed by our parties.

Our route led northward for a day and a half up the Wei-yüan Chiang, along the road to Chên-yüan T'ing, which had been followed by Captain Wingate in 1895. The

5: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16

The name Liu-t'ou-chiang is Chinese, meaning "bridge-head river," for *liu-tzŭ* is the name by which they call the rope bridges.

For five more days our road lay up the valley of the Mekong, but the going was by no means flat. The hills on both sides of the river are very steep and full of landslips, the formation being loose shale. The path keeps up on the hillside, rising in places to 10,000 feet or more, and continually crossing bare brown-looking spurs.

Between these spurs are little side streams running down from the snow-covered tops of the range, and in these little valleys the villages are prettily situated, surrounded by green fields of wheat and barley, and by pear and peach trees which were then in blossom.

The Mekong runs for the most part between steep banks and there is practically no flat ground along it. To the west is a fine snowy range, the highest peaks of which Ryder made about 20,000 feet by observations with the long-shaped clinometer.

The Tibetan inhabitants of this valley appear well off and live in an excellent climate where it does not get extremely cold. Their houses are well built, often of three storeys, the ground floor solidly constructed of stone, and the two upper floors usually of wood. The roofs are flat, made of large beams covered over with mud, and the upper storeys are built so that they cover less space than the storey below them; thus part of the roof of one storey forms a terrace or verandah to the storey above it.

On the 28th of April we reached Ya-k'a-lo, a straggling village of 100 houses. The place is important because of its salt wells which supply all this part of the country.

On our second march out of A-tun-tzŭ we had already met one French missionary, Père Bourdonnec who was on his way to Tzŭ-ku (Tse-kou according to French orthography). At Ya-k'a-lo we were to have the pleasure of finding Père Grandjean who had come from Ba-t'ang to take Père Bourdonnec's place during his absence. He took much interest in our project of getting through to Assam, though he did not give us much hope of success. We are much indebted to him for the assistance and advice he was always so ready to give us.

5: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16

known each other at Eton, for he was in the eleven while I was still a "lower boy" and would not have dared to address one who had attained such a distinguished position. After a few years in a cavalry regiment, he had thrown up his commission and come out to China as a missionary.

Two of the others whom we met were contemplating a journey further in to Tibet and hoped to establish a mission station at Ba-t'ang.

We also went to see M^gr^ Giraudeau, the Bishop of the French Tibetan mission, and thanked him for the many kindnesses we had received from the French missionaries.

Ta-chien-lu is the great trading mart of eastern Tibet. Furs, medicine, and musk are the exports to China, and tea is the principal import into Tibet. The amount of tea drunk in Tibet must be very large for the size of the population, for everyone, however poor, drinks it constantly, in fact at every meal. A certain quantity of P'u-êrh tea is imported from Yün-nan, but by far the greater part of the tea for Tibet passes through Ta-chien-lu.

It is grown in western Ssŭ-ch'uan chiefly in the Ya-chou Fu district. All that is imported into Tibet is of a very coarse quality and is largely adulterated with sticks. The cost of carriage to distant parts of Tibet is so large that a good quality of tea could be sold there only at a prohibitive cost.

Mr A. de Rosthorn has published a pamphlet[1] on the subject of the tea trade and this probably contains the most accurate information available. He estimates the weight of the annual import through Ta-chien-lu as 108,780 piculs, which comes to fourteen and a half million English pounds.

He discusses the question of whether tea can ever be profitably imported from Assam into Tibet, but comes to the conclusion that the Chinese tea, adulterated as it is with 65 per cent. of twigs and leaves of other plants, and sold at Ba-t'ang at 5½*d.* and at Lhasa at 11*d.* a pound will continue to hold its own, except possibly in parts of Tibet very remote from China.

[1] *On the Tea Cultivation in Western Ssŭ-ch'uan*, by A. de Rosthorn. London, Luzac & Co., 1895.

5: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16

Opium is produced in Yün-nan far beyond the requirements of the province, and is largely exported into other parts of China[1]. The opium of Yün-nan is considered by the Chinese to be of very fine quality, though not quite up to the standard of Indian opium. 249

Hemp, which at present is not much cultivated, might easily be extensively grown and exported for rope making. Many kinds of *fruit*, which will not grow in the tropical climate of Burma, thrive in Yün-nan, and even now form a fairly important export. These are apples, pears, quinces, peaches, apricots, cherries, persimmons (dried like figs), chestnuts, and walnuts. Yün-nan *tea* is famous all over China. There is not likely to be much trade in this commodity to Burma, but a railway through to Ssŭ-ch'uan should carry considerable quantities. *Livestock* already forms one of the principal exports from Yün-nan into Burma. Mules, ponies, cattle, and buffaloes are all far cheaper in China than in Burma, so that they can be sold at a profit in the latter country. Sheep are cheap in China, and do not thrive in the warm climate of Burma. At present slaughter-sheep are imported into Burma from India. 245 439 231 439

There are in Yün-nan large grazing grounds which are lying idle because there is not sufficient demand for live-stock. If the farmers had a ready means of disposing of their surplus animals, the flocks and herds of the province would doubtless largely increase. Moreover the trade which now exists in *horns* and *hides* would grow at the same time, and *wool* might become a most important article of export. 237 439

Among minor exports in which a considerable trade might spring up may be mentioned *pigs' bristles*, *ducks' feathers*, and the *white of eggs* for albumen; also from the Tibetan part of Yün-nan *furs* and *musk*.

As to minerals, *gold* has always been an article of export, chiefly in the form of gold-leaf to gild the Burmese pagodas. Whether *other metals* could be profitably brought into Burma or India is a question that cannot be decided till the mines have been more thoroughly examined, but 316 439

[1] This was written before the recent restrictions on opium-growing. See footnote on p. 311.

7: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

much from their crops as otherwise they might have realized. The classical example is that of wheat during the world war I, when wheat was in great demand throughout the world at that time and was sold for 2.50 to 3.00 Yuan[1] per bushel in Shanghai. At Chungking, however, only 1,500 miles away from the latter port, a bushel of wheat was sold for only ten cents! There is an old saying in the rural areas here: "Pai li pu fang tsu," literally meaning "bulk (grain) is not sold one hundred li away." This reflects vividly the difficulty and high cost of transportation.

Another astounding example is that many orange growers in the To Valley often let their oranges rot in the field rather than pick them, because it is so difficult and so expensive to get them to market. On the other hand, only 800 moles away, at Hankow, imported oranges are sold for about a dollar (Yuan) for a half dozen.

Finally, also due to the same difficult transportation, it is tragic to see many farmers in the more remote hilly areas let their land lie idle for months on account of the high transportation cost of shipping bulky fertilizers, such as soy bean or tung oil cakes.

7. Mining and Manufacturing Patterns

Approximately less than 10 per cent of the population in the Szechuan Basin are engaged in the mining and manufacturing activities. The Basin's recent rapid development in mining and manufacturing has strengthened its position as a rich self-sufficient geographic region. In fact, mining and manufacturing largely supplement the agricultural and forestry pursuits, and thus, as we shall see later, help to bring forth an increasing efficient agricultural and forestry land-use in the Basin.

With the numerous metamorphic formations, volcanic intrusions, and the Jurassic-Triassic (coal and salt-brine bearing here) formations, particularly in the fringing and the anticlinal regions, the Basin's mineral deposits are abundant and varied. They include both metallic and non-metallic deposits, such as iron, copper, gold, silver, aluminum, salt, coal, petroleum, and asbestos. Among them, judging from the volume of present production, salt, coal, and iron are by far the most important. The

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[1] One Yuan (dollar) in normal times (pre-war) has an exchange rate of approximately one-third of a United States dollar.

7: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

248 the water-supply of the nearby Tu-chiang-yen irrigation works. Hou-ma hemp is a spring crop. The seeds are sown in February, and the plants harvested in the middle of June, just as soon as they commence to flower. The stems are allowed to grow close together, and to reach eight feet or more in height. The culms are reaped, stripped of their leaves.

One of the most interesting practices in connection with Hou-ma hemp culture in these areas is the extremely intensive cultivation of the soil-beds. There is an old saying among the Hou-ma farmers, "Till nine times for hemp." This cultivation is necessary mainly because the roots of the young hemp plant, which are especially tender and weak, may be hampered in their proper growth if the soil bed is heavy. The use of "lu-tsao" (Astragalus sinensis) as green manure is also quite common here.

With the exception only of the Wen-chiang district, rotation with rape or wheat is commonly practiced by the hou-ma farmers of Chengtu Plain.

The uses and markets of hou-ma and chu-ma are just as different as their methods of culture and their physical requirements. In the case of chu-ma hemp, the white variety is used in the manufacture of the famous "hsia-pu," or summer cloth, which is well known over all parts of China, as well as in Korea and Japan. It has a particularly wide market in Hopeh, Shensi, Shangtung Honan, and Kwangtung provinces. It has also been shipped in considerable quantity to Korea and Japan. The green chu-ma hemp is all exported in the raw form to Japan and to France, for the manufacture of artificial silk. The hou-ma is used principally for rope-making, cordages, grain sacks, salt-bags, and military sacks. These products have their chief markets within the Basin, particularly in the salt-producing areas of Tze-liu-ching.

3. Special Agricultural and Horticultural Products

245 a) Citrus fruits.--Among all the sub-tropical products in the Basin, citrus fruits, especially oranges, have the widest range in geographical distribution. From Ching-Tang at the north to as far as Chiang-tsin at the south, nearly all the districts south of latitude 31 degrees N. produce citrus fruits. The most important centers of citrus fruit production are, however, confined to a few districts, namely, the Ho-chuan of the middle Chialing River, Chiang-tsin and Pa-hsien along the Yangtse,

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Ching-tang, Chien-yang, Tse-chung, and Nei-chiang of the upper and lower To River Valley, and Chang-shou and Wan-hsien in the east of the Basin (Fig. 36). These few districts generally account for over 80 per cent of the total crop (Table 10). The production of grapefruit is concentrated in the districts of Liang-shan, Chang-shou, and Feng-chieh. The total acreage in citrus fruit cultivation is generally estimated to be approximately 70,000 mow (Table 10), with 1,600,000 trees and a total production of some 200,000,000 fruits.[1]

Of all the tropical plants grown in the Basin, the introduction and cultivation of citrus fruits has the earliest history. As early as the Chin dynasty (265-419 A.D.), citrus fruits were reported grown here.[2] Later, at the end of the Ming dynasty (1368-1644 A.D.), after the wholesale massacre of the original population of the Basin by the rebels Chang and Li, and with the influx of large numbers of immigrants from the tropical provinces of Kwangtung and Fukien, a great number of new species of citrus fruits were brought in, and the acreage was greatly extended.

Two of the most serious problems in citrus fruit production here are the relatively high perishability of the local fruit and the absence of quick and efficient transportation facilities. It is reported that sometimes as high as 25 to 40 per cent of the total crop has been spoiled before the fruit could be shipped to distant markets. This is particularly true with the "hung-chu" or red oranges (citrus aurentium), which comprises about 85 per cent of the total citrus fruit crop. The "huang-ko," yellow peeled oranges and grapefruits, which comprise only 15 per cent of the total crop, are less perishable, and can better withstand long distance hauling. In general, the farmers have to sell the fruit as fast as it is picked. Normally this means that they have to sell it cheaply. For example, at Chungking, during the picking season, one can buy as many as 200 oranges for only one silver dollar, whereas at Hankow, approximately 650 miles away, the same dollar will purchase only 8 or 9 pieces of the imported oranges! This difference in price is certainly astonishing.

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[1] C. L. Chung, "Some Problems Regarding the Cultivation of Citrus Fruits in Szechuan Basin," Szechuan Reconstruction Weekly, III, No. 7 (1932), 16.

[2] Hua Yang Kuo Chih (Gazetteers of Hua-yang), Chuan 2, p. 8.

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245 At present, the farthest markets to which the citrus fruit of the basin can be safely and profitably shipped are at I-chang and Sha-shih, which are only about four hundred miles away.

The difficulties of marketing the fresh "hung-chu" red oranges are so great that many farmers find it more to their advantage to let the fruit rot in the fields and to sell the orange peel for medicinal purposes. The difficulty of marketing handicaps seriously the agricultural economy of these orange-producing areas. Recently, the Szechuan Provincial Agricultural Experimental Station established several breeding stations in Chiang-tsin and Ho-chuan, with a view to selecting breeds of the less perishable species of "huang-ko" or yellow oranges. At the same time, various canning plants have been recently established in the producing areas to manufacture canned orange juice and other canned fruit products. Both of these measures will undoubtedly help to relieve the grave situation.

b) Tea.--Tea (Camellia thea) is recorded to have been cultivated in Szechuan Basin during the Early Han dynasty (202 B.C. to 25 A.D.).[1] However, it did not become a common beverage among all classes in the Basin until the six and seventh centuries.[2] There are now some forty districts in the Basin reported to be producing tea of one kind or another (Table 11). The three principal tea-producing areas of the Basin (Fig. 37) are the western area, including Pei-chuan, Kuan-hsien, Te-I, and Tsung-nai; the eastern area, including the Wan-yuan, Kai-chiang, and Cheng-ko districts; and the southern area, including Ho-chiang, Yun-nien, and Ping-shan. Among these, the western area is by far the most important in both the quantity and the quality of the tea produced. The total tea acreage is normally about 300,000 mow, and has an annual output of about 120,000 piculs (Table 11).[3]

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[1] Quoted by an article entitled "The Production and Market of Tea at Kuan-hsien Area," Szechuan Econ. Monthly, VIII, No. 3 (1937), 87.

[2] A cup of tea in China, taken not primarily to assuage thirst, is a thing to play with, to set before a guest, and to talk over. The tea house, a unique Chinese institution, which is found in Szechuan Basin perhaps more than in any other province of China, is much more than a club. It is a meeting place where business talks are generally carried on, rumors are spread, and gossip about one's friends is tossed about. The tea house is a vital factor in the social and cultural life here.

[3] Bureau of Agricultural Research, "Statistics on the Production of Tea," Szechuan Economic Monthly, VIII, No. 1 (1936), 50.

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As in many other parts of China, tea cultivation here is primarily a by-profession of farmers, and very few large plantations are found. It is reported that there are more than 35,000 farming families engaged in producing tea. 245

Perhaps nowhere else in China has tea been produced in so many grades and prepared in so many forms as here in the Basin. The grades range from the most handsomely packed silver-needle green tea of finest aroma to the most roughly-wrapped ugly-looking brick tea. This range is made available in order to meet the varied demands of widely different markets. The most important export tea markets of the Basin are the regions of Tibet, Sikang, and Kokonor. The Basin supplies nearly all the demand of these areas, which normally totals more than six million dollars per year.

Nevertheless, this small but profitable trade may soon be denied to the Basin. It is greatly feared that keen Indian competition is growing and threatening the Basin's export tea trade to Tibet. In fact, the competition of Indian tea even now extends from Tibet to the Sikang markets. Geographically, the Indian tea is in a more favorable position to compete for the Tibetan tea market than tea from the Basin. For example, from Darjeeling to Lhasa it is only about 350 miles, while from Kan-ting (Tachien-lu), the principal collecting point of the Basin's tea on its way to Tibet, to Lhasa is twice that distance (nearly 700 miles) and requires sometimes two months' journey. Moreover, the physical difficulties of transportation in the Basin are also greater. This favorable geographic position of India is further evidenced by the fact that a considerable portion of the herbs from the Tibetan highlands are now being exported through the Darjeeling route.

The tea for the export markets comes largely from the western and southern producing areas. Normally Kuan-hsien is the collection-point and Sung-pang the distribution point of all tea from the western producing areas, whereas Yaan and Kan-ting (Tachien-lu) serve in the same capacity for the southern producing areas. The tea for these distant markets is generally wrapped in 60-pound or 80-pound packages and is transported principally on men's backs.

c) Medicinal herbs.---Szechuan Basin has long been noted in China, in fact in the whole Far East, for its production of a 249

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greatest production is from the eighth to the sixteenth year. A decline in productivity begins with the seventeenth year. Thus there is a local saying, "The seventeenth year is the limit for the Tung Tree." 314 137

The tung seed-collecting season varies from locality to locality in the Basin, but, on the whole, comes in the middle of September. After the green fruit is picked, it is piled into heaps and covered with straw or grass. The heat thus generated quickly rots the fleshy part of the fruit and the seeds are removed. They are then roasted,[1] ground, steamed, and pressed, like other oil-producing seeds. All of these processes are done with very simple equipment and at low efficiency. The roasting and steaming are done by burning of charcoal or coal, whereas the pressing and grounding are all done by animal power. The product, which amounts to about 40 per cent of the weight of the seed, is a brown and somewhat watery oil. It is sent to the nearby local plants for refining, and then packed in wooden tubs and bamboo baskets to be shipped down the Yangtse to Shanghai for export abroad.

In the economy of the Szechuan Basin the Tung tree figures as a natural mountain product. Usually, the trees are left to grow wild; very little attempt is made by the farmers to cultivate them. Only during recent years, following the continuous success in the export trade, have a large number of Tung tree plantations and nurseries been organized and scientific methods applied to cultivation and production. The best known plantations are the I-shui at Wan-hsien, and the Jen-ho at Pi-shan. Each comprises from 200,000 to 300,000 trees. Both have met with phenomenal success during the past few years. An increasing number of such plantations, sponsored either by the government or by private interests, have recently been organized.[2] 245.

3. Transportation and Marketing of Tung Oil

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The present war has greatly stimulated the production of tung oil in Szechuan and has brought drastic changes in the

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[1] Roasting is, however, not essential and is not practiced by all farmers.

[2] Chao, op. cit., p. 21.

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The most commonly cultivated white-wax tree, the Pai Lou Shu (Praxinus Chinensis) is a fast-growing tree of medium size. In outer appearance it is very much like a willow tree but generally not as tall (Fig. 41). It prefers a mild and humid climate. It grows readily from cuttings of the one- or two-year-old branches of the mother tree. After three or four years the tree is suitable in size for wax production. It furnishes a rich sap, which by itself is of no value and is used to nourish the insect. The metamorphosis of the wax insect is similar to that of the silkworm. From egg it becomes larva, pupa, and eventually adult. It takes one year to complete its life cycle. It is the male larva which produces the wax, while the female merely lays eggs to carry on the line. The present strain in Ning-yuan district is said to be five hundred years old.

During the early spring the eggs of the insects wrapped in leaves of the Tung or some other tree, with holes pierced for air, are suspended on the branches of the wax tree to hatch. Generally, the insect prefers the tender young branches of two- or three-year-old trees, of which the sap is rich and the epidermis of the branches is soft enough for the young insects to break through. Within forty to fifty days after the eggs are hatched the wax appears upon the tree and gradually increases until the early autumn (September), when the harvest begins. The snow-white wax accumulated on the main branches is scraped down with sharp knives, while the wax on small twigs is cut down with the twigs. The wax is then steamed and refined two or three times, until the pure white wax is precipitated.

The white wax has a wide scope of uses, including candles, glazing for paper, silk, furniture polish, coating for pills, models, polish for valuable metal utensils to prevent oxidation, and many medicinal purposes. The residue from white-wax refining is often used for fertilizers. Formerly, about 80 per cent of the total product was exported to Japan and the United States. But it now finds its markets in the interior provinces, particularly in Kansu and Shensi. It is reported that Chinese wax is superior[1] to any other wax produced in the world because it has no smell and leaves no stain whatsoever. Of particular importance

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[1] J. S. Ho, "The Wax Tree Culture and Its Problems in Szechuan," Chinese Reconstruction Weekly, XI, No. 6 (1940), 11-18.

TABLE 10

PRODUCTION OF CITRUS FRUITS IN SZECHUAN (1936)

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Name of District	Cultivated Area (Mow)	Number of Trees	Total Amount of Production (Pieces)	Per Cent
Ho-Chuan.....	13,366	410,000	45,200,000	22.3
Chiang-Tsin.....	8,334	200,000	36,200,000	17.8
Pa-Hsien.....	8,500	170,000	23,500,000	11.5
Ching-Tang.....	7,611	195,000	20,300,000	10.0
Chang-Shou.....	8,200	160,000	15,050,000	7.4
Nei-Chiang.....	3,000	60,000	12,000,000	5.9
Wan-Hsien.....	2,334	56,000	10,000,000	4.9
Tzu-Yang.....	2,400	40,000	9,000,000	4.4
Tzu-Chung.....	2,000	40,000	7,500,000	3.7
Chien-Yang.....	1,000	20,000	5,000,000	2.4
Peng-Hsi.....	2,500	60,000	4,030,000	1.9
I-Ping.....	3,824	15,000	4,000,000	1.9
Nan-Chung.....	3,000	60,000	3,600,000	1.7
Kuang-Han.....	1,000	20,000	2,000,000	.9
Chu-Hsien.....	500	10,000	2,000,000	.9
Lu-Hsien.....	500	10,000	2,000,000	.9
Tien-Chiang.....	650	16,000	280,000	.1
Feng-Chieh.....	127	2,046	170,000	.08
Sui-Ning.....	250	5,000	120,000	.05
Pih-Shan.....	200	5,000	100,000	.04
Lung-Chang.....	126	2,500	80,000	.03
Ta-Chu.....	100	3,000	50,000	.02
Total.....	69,522	1,559,546	202,180,000	100.00

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TABLE 11

PRODUCTION OF TEA IN SZECHUAN (1936)

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Name of District	Total Amount (In Piculs)	Per Cent of Total
Ya-An	20,000	17.3
Kuan-Hsien	16,452	14.2
Ta-I	12,000	10.4
Pai-Chuan	10,800	9.3
Mo-Chiang	10,000	8.6
Yung-Ching	10,000	8.6
Lao-Hsien	6,000	5.1
Tsung-Nai	5,000	4.3
Cheng-Ko	3,000	2.5
Kung-Lien	2,500	2.1
Ping-Shan	2,000	1.7
Wan-Yuan	2,000	1.7
Tien-Chuan	1,700	1.4
An-Hsien	1,600	1.3
Chi-Chiang	1,500	1.2
Ping-Wu	1,500	1.2
Ching-Shen	1,500	1.2
Chien-Wei	1,500	1.2
Liang-Shan	1,320	1.1
O-Mei	1,050	.9
Ma-Pien	955	.8
Te-Hsien	500	.4
Nan-Chuan	500	.4
Chia-Chiang	500	.4
Mien-Chu	300	.2
Yung-Hsien	214	.1
Hsing-Wen	200	.1
Hsuan-Han	200	.1
Tung-Liang	120	.1
Chien-Chiang	85	.07
O-Pien	80	.07
Chung-Hsien	78	.06
Han-Yuan	60	.05
Kuang-An	54	.04
Tien-Chiang	40	.03
Chang-Ning	36	.03
Nou-Hsi	30	.02
Kai-Chiang	25	.02
Ming-Shan	20	.01
Pu-Chiang	20	.01
Siu-Shan	16	.01
Tang-Ling	4	.003
Wen-Chuan	3	.002
Total	115,461	100.000

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75,000 taels. According to Hosie, the value of musk exported from Tibet in 1904 was 300,000 taels and the weight 1,100 to 1,200 cattles, 6,000 ounces of gold dust came from Tibet, whereas only 400,000 cattles (260 tons) of sheep wool and only 150,000 sheep skins passed the customs office in Ta tsien lu.

In 1907 the wholesale merchants told me that the amount of musk that had come through Ta tsien lu in the last 12 months was estimated at 1,400-1,500 cattles. The Li kin official at the East Gate down below told me it was only 1,000 cattles. Without doubt, a great deal is smuggled.

Desgodins in Le Tibet d'après la correspondance des Missionaires, Paris, 1885, p. 349, figured that only 2,666,640 pounds of tea come through Ta tsien lu.

For Chinese export into the entire richer and relatively densely populated southern part of Tibet only Ta tsien lu is of importance. Thus the figure of Hosie seems even slighter and all the more surprising if one compares them with the Anglo-Indian export to Tibet which, for the year 1897-1898, for instance, according to the Blue Book on Tibet for 1904, already rose to 820,000 rupies, (with about 820,000 rupies import to India), and withal England complained at that time, as is well known, that as a matter of principle China excluded her from trade with Tibet. At that time the export of tea all but stopped because the Tibetans did not care for the taste of Anglo-Indian tea.

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/210/ Dartsendo tea which, without exception, comes from the districts of the neighboring prefecture of Ya tschou fu, comes in four varieties and is rather loosely packed in bamboo mats. It is brought here by Chinese carriers who can transport a veritable inhuman weight (up to three and one-half hundredweight), piled high on their shoulders. The tea is coarse, with large leaves, and is generally mixed with stalks and little twigs. It has a harsh flavor and the aroma is slight and quickly evaporates. It is brown in color and looks like dried and pressed clippings from a garden hedge. The Chinese deliver the tea as far as the East Gate of Ta tsien lu. From there it goes by way of the go tschwan into the hands of Tibetans who have traveled here from the interior. This arrangement with the